

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method for improving data transmission between a transmitter and a receiver in a Discrete Multitone (DMT) based Digital Subscriber Line (DSL) system, said transmitter including an Inverse Fourier Transform (IFT) for modulating said data and said receiver including a Fourier Transform (FT) for demodulating said data, said method comprising the steps of:
  - a) determining, at said transmitter, whether or not a spectrum of said IFT output is periodic with a clock of a predefined standard-size IFT;
  - b) communicating, before data transfer begins, a result of said determination from said transmitter to said receiver; and
  - c) adapting, at said receiver, said FT if said determined spectrum is not periodic with said clock of said predefined standard-size IFT.
2. A method as defined in claim 1, wherein said FT is adapted by doubling a size of said FT.
3. A method as defined in claim 1, wherein said transmitter further communicates a size of said IFT to said receiver.
4. A method as defined in claim 3, wherein said FT is adapted by matching a size of said FT with said size of said IFT.
5. A method as defined in claim 1, wherein said communication occurs during handshaking between said transmitter and said receiver.
6. A method as defined in claim 1, wherein said IFT is an Inverse Fast Fourier Transform (IFFT).
7. A method as defined in claim 1, wherein said FT is a Fast Fourier Transform (FFT).

8. A system for improving data transmission in a Discrete Multitone (DMT) based Digital Subscriber Line (DSL) system, said system comprising:

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- a) a transmitter including an Inverse Fourier Transform (IFT) for modulating said data, said transmitter for determining whether or not a spectrum of said IFT output is periodic with a clock of a predefined standard-size IFT and communicating, before data transfer begins, a result of said determination to said receiver; and
  - b) a receiver including a Fourier Transform (FT) for demodulating said data, said receiver for adapting said FT if said determined spectrum is not
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- periodic with said clock of said predefined standard-size IFT.